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SUNSHINE AT KIMBERLEY, S. AFRICA.

THE numbers given below represent the results of three years' (1894-96) observations on the duration of sunshine, taken at the Meteorological Observatory maintained by the De Beers' Company at Kenilworth, near Kimberley. They may possibly interest your readers, since in magnitude they cannot be surpassed by many stations on the earth's surface. In fact one almost gets tired of the perpetual brightness of the sky, and longs for the too-much maligned "leaden" sky of England, of which, as will be seen from the tables, we get only a fortnight's experience in three years.

The quantities for each hour are expressed in minutes, only the monthly and yearly totals being reduced to hours. The number of rainy days, and the amount of rainfall, are put in for comparison. Under the heading "No. of days" will be seen two columns of numbers: the first of these gives the number of days on which a measurable quantity fell, the second all days on which any rain fell. The amounts of rain too small to measure are written ·000, in accordance with the custom followed in Natal.

Of course three years is too short a period for fruitful discussion. It is, however, perhaps worth while to point out that if the sequences hold good for ten or twenty years, then the greater the rainfall the later the hour of maximum sunshine. Attention may be called also to the winter sunshine, particularly, for example, that of July, 1896, where between the hours of X. and XI. only eight minutes of cloudy sky were registered. Indeed for that same hour, the record is only broken for ten minutes from June 17th to August 6th (inclusive)—fifty days.

The instrument used is a Jordan Photographic Recorder, by Negretti & Zambra, of the twin semi-cylinder pattern. The record is measured after a development (for as near as possible fifteen minutes) in rain water—that is, when rain water can be obtained. When there is no rain water, river (Vaal) or spring water has to be used. I do not fancy that the different waters make any difference in the result. River and spring waters certainly bleach the charts

(*Continued on page* 20.)

Kimberley Sunshine, 1894 *and* 1895. *Taken with a Jordan Recorder* (*twin semi-cylinder pattern*).

	V	VI	VII	VIII	IX	X	XI	NOON	I	II	III	IV	V	VI	VII	Month		Rainfall.		
1894.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	hours	mins	No. of days without Sunshine.	No. of days		Inches.
Jan.	614	1234	1258	1434	1334	1327	1393	1447	1478	1355	1228	1154	1030	490	279	36	2	13	14	7·29
Feb.	113	763	854	911	906	970	1008	1059	999	1085	975	837	702	142	188	44	3	10	11	5·35
March	9	1098	1494	1477	1526	1539	1398	1375	1197	1159	1170	1175	818	1	257	16	1	14	15	2·32
April	...	607	1563	1522	1550	1654	1628	1497	1577	1468	1517	1456	526	...	276	5	...	7	7	1·57
May	...	85	1490	1485	1508	1501	1514	1443	1463	1396	1338	1178	35	...	240	36	1	7	7	·93
June	...	...	1223	1560	1573	1646	1679	1636	1663	1731	1727	1213	...	...	260	51	...	2	2	·06
July	...	...	1261	1755	1746	1749	1774	1755	1742	1793	1734	1272	...	...	276	21	...	...	0	·00
Aug.	...	193	1508	1679	1642	1664	1745	1743	1730	1721	1691	1456	163	...	282	15	...	1	3	·28
Sept.	...	608	1356	1523	1622	1629	1660	1634	1608	1527	1498	1588	732	...	283	5	...	5	5	·27
Oct.	94	1285	1493	1543	1521	1565	1532	1517	1514	1505	1387	1352	1186	75	292	49	...	8	10	·67
Nov.	522	1443	1609	1615	1690	1722	1699	1590	1617	1387	1283	1216	1263	484	319	0	...	8	10	3·25
Dec.	732	1463	1517	1530	1607	1548	1518	1475	1438	1414	1298	1246	1165	655	310	6	...	9	14	2·52
Totals...	2,084	8,779	16,626	18,034	18,225	18,514	18,548	18,171	18,026	17,541	16,846	15,143	7,620	1,847	3266	44	7	84	98	24·51

1895.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	hours.	mins	No. of days without Sunshine.	No. of days		Inches.
Jan.	734	1513	1639	1644	1644	1631	1575	1534	1381	1418	1443	1311	1283	591	322	21	...	8	12	·93
Feb.	243	1094	1193	1231	1304	1316	1375	1351	1247	1275	1172	1024	946	236	250	7	1	14	16	3·53
March	13	753	1187	1209	1343	1188	1222	1196	1139	1210	1171	1042	760	5	223	58	...	14	19	1·94
April	...	417	1184	1420	1496	1456	1459	1306	1435	1424	1305	1151	382	...	240	35	1	11	11	3·46
May	...	45	1248	1598	1727	1770	1730	1696	1744	1696	1654	1355	96	...	272	39	...	7	7	1·30
June	...	2	1257	1656	1695	1721	1729	1773	1730	1739	1721	1188	...	...	270	11	...	...	1	·00
July	...	...	1140	1568	1744	1785	1732	1690	1717	1677	1715	1109	3	...	264	40	...	1	1	·21
Aug.	...	114	1462	1712	1808	1761	1766	1789	1798	1761	1713	1500	212	...	289	56	...	...	1	·00
Sept.	...	784	1586	1683	1715	1676	1694	1662	1722	1702	1600	1613	835	...	304	32	...	1	2	·02
Oct.	36	1242	1551	1621	1715	1709	1584	1488	1558	1582	1469	1510	1244	52	306	1	...	4	6	·08
Nov.	361	1391	1416	1389	1407	1425	1358	1429	1347	1439	1350	1265	1148	310	283	55	1	10	10	1·79
Dec.	651	1360	1594	1623	1571	1543	1515	1423	1450	1359	1203	1302	1325	562	308	1	...	11	14	2·34
Totals...	2,038	8,715	16,457	18,354	19,169	18,981	18,739	18,337	18,268	18,282	17,516	15,370	8,234	1,756	3336	56	3	81	100	15·60

Kimberley Sunshine, 1896. *Taken with a Jordan Recorder (twin semi-cylinder pattern).*

	V	VI	VII	VIII	IX	X	XI	NOON	I	II	III	IV	V	VI	VII	Month.		Rainfall.		
1896.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	mins.	hours.	mins	No. of days without Sunshine.	No. of days	Inches.
Jan.	478	1374	1450	1583	1549	1565	1550	1521	1410	1336	1231	1113	967	421	292	28	...	11	14	1·48
Feb.	184	1245	1335	1391	1343	1411	1370	1262	1191	1199	1270	1105	990	173	257	49	...	7	13	·98
March	10	1033	1458	1444	1506	1534	1494	1436	1356	1220	1258	1024	578	9	256	0	...	14	18	2·74
April	...	300	1290	1343	1433	1415	1409	1381	1483	1359	1256	1176	256	...	235	1	2	11	12	2·98
May	...	...	1097	1450	1547	1613	1523	1574	1653	1623	1538	1168	13	...	246	39	...	7	9	2·25
June	...	...	862	1390	1405	1417	1358	1431	1438	1483	1349	740	...	...	214	33	1	6	8	·56
July	...	5	1323	1785	1840	1852	1831	1831	1850	1829	1747	1194	7	...	284	54	...	...	...	...
Aug.	...	131	1331	1545	1586	1711	1709	1661	1670	1621	1536	1182	95	...	262	58	...	4	4	·43
Sept.	...	632	1613	1713	1710	1691	1690	1680	1633	1621	1650	1589	527	...	295	49	...	...	2	·00
Oct.	45	1291	1597	1745	1750	1701	1620	1609	1562	1454	1394	1334	937	38	301	17	...	4	7	·25
Nov.	342	1236	1351	1455	1516	1479	1382	1453	1450	1283	1311	1102	1055	272	278	7	...	10	11	·98
Dec.	530	1181	1120	1254	1453	1425	1291	1206	1097	1026	986	939	828	301	243	57	1	16	17	8·42
Totals...	1,589	8,428	15,827	18,098	18,638	18,814	18,227	18,045	17,793	17,054	16,526	13,666	6,253	1,214	3169	32	4	90	115	21·07

more; but rain water gives them a much cleaner and brighter appearance.

The exposure is good. The horizon is scarcely broken, save here and there by a "tailings" heap and a few inevitable gum trees. These last though are not of much account, since they tend to turn their leaves edgewise to the sun, and throw very little shadow.

No correction has been made for refraction, or for the want of actinic power in the sunlight when the sun is low and the atmosphere more or less dusty.

The rain-guage is an eight-inch, of the Meteorological Office pattern, mounted with its rim three feet above ground, the receiving chamber being protected from the rays of the sun by a stout wooden box.

Our position is—

Lon. 24° 27′ E. Lat. 28° 42′ S.

Altitude about 3,900 feet.

J. R. SUTTON, B.A.

The Kenilworth Observatory, Kimberley, S. Africa.

Mr. W. Ellis, F.R.S., has very kindly calculated the percentage of the possible duration, which the results given in the foregoing tables represent :—

Kimberley.—Percentage of Sunshine.

	1894.		1895.		1896.
January	66	.....	76	.....	69
February	52	.....	69	.....	68
March	68	.....	59	.....	68
April	81	.....	71	.....	69
May	73	.....	83	.....	75
June	84	.....	87	.....	69
July	85	.....	82	.....	88
August	82	.....	85	.....	77
September	79	.....	85	.....	83
October	74	.....	77	.....	76
November	79	.....	70	.....	69
December	72	.....	72	.....	57
The Year	74	.....	76	.....	72

THE TEMPERATURE OF FEBRUARY, 1897.

THE weather of the latter part of February, 1897, was marked by unusual and almost unprecedented mildness, and we have searched our own record at Camden Square, which now extends over nearly 40 years, for comparable periods in the past.

Taking the month as a whole we find nothing very exceptional:—

The mean 9 a.m. temp., 42°·6, has been exceeded in 6 years, the highest being 45°·8 in 1869.

The absolute max., 58°·0, has been exceeded in 7 years, the highest being 62°·5 in 1868,

The average max., 48°·4, has been exceeded in 8 years, the highest being 51°·7 in 1869.

The absolute min., 27°·9, has been exceeded in 6 years, the highest being 31°·4 in 1872.

The average min., 39°·0, has been exceeded in 3 years, the highest being 40°·6 in 1869.

From the above we see that the month, notwithstanding its being decidedly warm, shows no very exceptional value, though the average min. is as high only once in 13 years.

Turning now to the warm period towards the end of the month, we find that for ten consecutive days, from 18th to 27th, the absolute max. was 50° or higher, For 8 consecutive days, from 19th to 26th, the 9 a.m. and 9 p.m. temperatures were above 45°, and for the 8 days, 20th to 27th, the min. were above 40°, while for the 9 consecutive days, 19th to 27th, the mean temp. was 48°·2, and above 45° each day.

The following table gives the readings and the means for this period :—

TABLE I.—*Shade Temperature at Camden Square, London, February 19th to 27th*, 1897.

DATE.	9 A.M.	9 P.M.	MAX.*	MIN.	MEAN 9 A.M. 9 P.M. M. and m.
	°	°	°	°	°
19th	46·4	48·9	50·1	39·3	46·2
20th	47·2	46·3	53·7	46·2	48·4
21st	45·6	46·2	51·6	43·6	46·7
22nd	50·1	51·8	57·0	44·6	50·9
23rd	45·1	46·6	53·4	44·3	47·4
24th	46·7	46·7	50·0	45·3	47·2
25th	48·4	50·4	52·2	46·1	49·3
26th	51·9	48·2	58·0	48·4	51·6
27th	44·8	42·0	52·8	43·8	45·8
Average ...	47·4	47·5	53·2	44·6	48·2

* The Max. Temp. on the 18th was 53° 3.

The conditions shown in this table are far eclipsed by 1869, when from Jan. 28th to Feb. 17th—a period normally considerably colder—the mean temp. averaged 48°·3; and during the whole 21 days there were only 3 with a mean below 45°; the only element in which the 9 days of 1897 exceeds the 21 days of 1869 being the average min., 44°·6 for the former and 43°·3 for the latter.

This period of 1869 is so remarkable that we give the whole of the readings in Table II. :—

TABLE II.—*Shade Temperature at Camden Square, London, January 28th to February 17th*, 1869.

DATE.	9 A.M.	9 P.M.	MAX.	MIN.	MEAN 9 A.M. 9 P.M. M. and m.
	°	°	°	°	°
Jan. 28...	47·2	49·5	53·8	37·6	47·0
,, 29...	46·8	45·5	51·9	46·2	47·6
,, 30...	44·0	49·5	52·7	40·4	46·7
,, 31...	52·6	53·1	56·3	43·0	51·2
Feb. 1...	52·8	49·0	55·1	51·2	52·0
,, 2...	44·0	40·8	49·2	42·4	44·1
,, 3...	48·4	51·2	55·0	33·9	47·1
,, 4...	53·0	49·8	57·2	43·5	50·9
,, 5...	50·2	48·2	60·8	45·8	51·3
,, 6...	48·2	46·2	57·8	42·8	48·8
,, 7...	52·3	50·0	53·7	42·5	49·6
,, 8...	53·2	53·0	54·0	48·8	52·2
,, 9..	49·8	46·5	50·8	47·6	48·7
,, 10...	50·5	51·8	55·7	44·6	50·6
,, 11...	54·0	48·7	56·4	49·8	52·2
,, 12...	42·0	37·8	50·8	41·9	43·1
,, 13...	40·1	42·8	48·8	32·0	40·9
,, 14...	46·5	48·8	50·5	38·6	46·1
,, 15...	47·2	46·3	49·2	45·6	47·1
,, 16...	47·6	50·9	52·4	43·9	48·7
,, 17...	50·8	46·2	53·6	46·8	49·4
Average ...	48·6	47·9	53·6	43·3	48·3

Selecting the warmest 9 consecutive days in Feb. 1869 and comparing them with the 1897 means at the foot of Table I., we have—

		9 a.m.	9 p.m.	Max.	Min.	Mean Temp.
		°	°	°	°	°
1869.	Feb. 3–11.	51·1	49·5	55·7	44·4	50·2
1897.	Feb. 19–27.	47·4	47·5	53·2	44·6	48·2
Excess in 1869.	... ...	3·7	2·0	2·5	—	2·0
Excess in 1897.	... ...	—	—	—	0·2	—

showing higher values in 1869, except in the one element of min. temp. where the difference is trifling.

In the whole of the 40 Februaries over which the observations extend, we have been able to find only 5 instances of 9 warmest days in which any one component (*i.e.*, 9 a.m., 9 p.m., max. or min.)

of the mean temp. exceeded the corresponding value for 1897. These are set out in Table III., which is self-explanatory. It shows that although no year but 1869 can show a warmer nine-day period in February than 1897, one or two run it very close, notably 1877.

TABLE III.—*Warm Nine-day Periods in February.*

YEAR.	PERIOD.	9 A.M.	9 P.M.	MAX.	MIN.	MEAN.	No. of Components higher than in 1897.
		°	°	°	°	°	
1867	12th – 20th	47·4	47·6	52·7	42·9	47·6	1
1868	21st – 29th	47·8	45·6	53·9	41·9	47·3	2
1869	3rd – 11th	51·1	49·5	55·7	44·4	50·2	4
1876	15th – 23rd	48·2	47·0	52·8	43·0	47·8	1
1877	7th – 15th	48·8	47·4	53·8	42·3	48·1	2
1897	19th – 27th	47·4	47·5	53·2	44·6	48·2	...
No. of instances higher than 1897.	...	4	2	3	0	1	10

THE GALE OF MARCH 3RD, 1897.

THE damage caused by the above gale all along the south coast of England has been so fully described in the newspapers, that we do not think it necessary to dwell upon it—but the two following notes from old correspondents give details not to be found elsewhere.

To the Editor of the Meteorological Magazine.

SIR,—The gale on Ash Wednesday morning was sufficiently severe to attract your attention and investigation, so here are some notes from North Cadbury.

MARCH 2nd.—Wind rose suddenly at 3 p.m., and barometer, which had fallen slowly all morning, fell rapidly after 4 p.m.; by 10 p.m. it was down to 28·90 (aneroid).

MARCH 3rd.—4 a.m., at 28·83; 7 a.m., 28.84; rapid rise began about 8 a.m., and then the wind, which had been *strong* for the previous 17 hours, became *serious*; just before 9 it became *alarming*. S.W. overnight, it had slowly veered to due W. and there it stuck. It had rained off and on from the said 3 p.m., pretty continuously though, and now began to snow; at 9 a.m. I went out to measure the rain (·70 in.) under great difficulties from the fury of the wind. A large elm had fallen across a road into my paddock just before. I saw a thorn go while at the rain-guage; another elm went immediately

after. Mrs. Boys saw the two elms go. I won't enumerate all the disasters, trees, chimneys, thatch, tiles, &c. But though there is no getting accurate time from anyone else, I am pretty sure that most of the damage was done, as in the Midland hurricane, in a very short time—between 9 and 9.15 a.m. It was *not* so bad as the Midland hurricane at Easton Mauduit, Northamptonshire, in 1895, but not far short of it. The general testimony of my farmers is "worst wind they ever knew."

You may be interested to learn that 17 panes of glass (nearly a square yard) in the westernmost window of the S. side of the Church were *blown outwards.* Not a scrap of glass was inside. They were *not* exposed to the wind.

I cannot tell when this glass went. Can only infer that at the time of the great blasts (9—9.15) there was diminished pressure outside the building, and so the weakest glass went.—Yours very truly.

H. A. BOYS.

North Cadbury Rectory, Bath.

To the Editor of the Meteorological Magazine.

SIR,—A terrific W.N.W. gale blew from 6.30 to 7 a.m. this morning, causing much damage to roofs and trees. The barometer (corrected to 32° and sea level) fell from 29·852 in. at 8.15 a.m. yesterday (2nd) to 28·860 in. at 2.50 a.m. this morning (as much as 0·158 in. from 5 to 6 p.m., when it was 29·289 in.), and rose to 29·620 in. at 9.17 p.m. this evening. The temperature rose from 34°·0 in the early morning of the 2nd to 49°·2 last evening, fell to 37°·2 between 9.17 and 11.40 a.m. to-day, and rose to 44°·1 since. The dry and wet bulb thermometers read 40°·6 and 39°·1, with a light W. wind and cloudy sky at 9.17 a.m.; 48°·9 and 48°·0, with a S.S.W. gale and slight rain at 9.17 p.m. yesterday; 41°·0 and 35°·3, with a W.N.W. gale and clouds at 9.17 a.m., and 39°·8 and 37°·1, with a W.N.W. breeze and clear sky at 9.17 p.m. to day. A solar halo was seen from 10 to 11 a.m. yesterday; showers fell to 1.47 p.m., rain from 2.45 to 9.25 p.m. (heavy at times from 4 to 6 p.m.), and showers after 11.5 p.m. yesterday, with H. and S. to-day and L. about 1 a.m.; 1·00 in. fell in 12 hours ending 9.17 p.m. yesterday, 0·07 in. more up to 9·17 a.m. to-day, and 0·04 in. to 9 p.m. A heavy S. gale blew from 7 to 7.30 p.m. yesterday, which veered to S.W. and lulled at 10 p.m., but rose again in the early morning and veered to W.N.W. at 6.30 a.m., and blew very hard till 8 a.m. to-day.—Yours truly,

EDWIN E. GLYDE.

Rose Villa, Tavistock, March 3rd, 1897.

THE HEREFORD EARTHQUAKES.

WE have just found in a privately printed paper by H. Lawson, F.R.S., the following remarkable confirmation of our suggestion as to the frequency of Hereford earthquakes—

1841.—"An unusual phenomenon in this part of England occurred in Hereford on the morning of the 25th of January, when about 3 o'clock the shock of an earthquake was sensibly felt in Castle Street, Harley Court, the High-town and Bewell Street, and produced the emotion of fear in all those who felt it, *viz.*, eight persons. It was spoken of by them as causing an indescribable sensation, accompanied by the apparent tilting of the bed on which they were lying. The wind was still and about N.W.; and freshened about half an hour afterwards, when a considerable fall of snow followed. At the same hour in the neighbourhood of Carmarthen a very smart shock of an earthquake took place."—H. LAWSON, F.R.S.

ROYAL METEOROLOGICAL SOCIETY.

AT the meeting of this Society on Wednesday evening, Feb. 17th, Mr. Edward Mawley, F.R.H.S., President, read a report on the "Phenological Observations during the Past Year." He showed that throughout the flowering season wild plants came into bloom much in advance of their usual time, and were, as a rule, earlier than in any year since 1893. The wealth of blossom on nearly all kinds of trees and shrubs was a noteworthy feature of the spring and early summer, while the abundance of wild fruits in the autumn was even more exceptional. From an agricultural and horticultural point of view the one great drawback of the year, which must otherwise have proved one of the most bountiful on record, was a drought that lasted almost without break—at all events, as far as vegetation is concerned—from March to September. The wheat crop proved the largest and best for many years, while there was a good yield of barley and potatoes. The small fruits were also good. With these exceptions, all the farm and garden crops were more or less indifferent, the crop of hay being particularly scanty.

The Hon. Rollo Russell gave the results of some observations on "Haze and Transparency," which he had made at Haslemere, in Surrey. From these it appears that the clearest hours at a good distance from towns are from about noon to 3 p.m. The clearest winds at Haslemere are those from S. to N.W. inclusive, and especially W.S.W., W., and W.N.W; the haziest are those between N. and E. On bright mornings, with a gentle breeze or calm, from autumn to spring, the haze of fog which has lain on the low ground, frequently covers the hills in the course of its ascent a few hours after sunrise. At any distance within 100 miles of London, or of the Black Country, observations requiring clear views are likely to be interfered with, when the wind blows from their direction, and should therefore be taken early.

SEISMOLOGICAL SURVEY OF THE WORLD.

WE have been reqnested to insert the following circular, so that this important undertaking may be generally known. The invitations for assistance have, we understand, been in many cases forwarded by the Foreign Office, and by the Colonial Office. Obviously, it is desirable that all parts of the earth should be represented, and it is not necessary or expedient that the observatories should be near one to another.—ED.

British Association for the Advancement of Science.

SEISMOLOGICAL COMMITTEE.

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BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,
BURLINGTON HOUSE,
LONDON, W.

SIR,—It has been established that the movements resulting from a large earthquake originating in any one portion of our globe can, with the aid of suitable instruments, be recorded at any other portion of the same; therefore, the Seismological Investigation Committee of the British Association are desirous of your co-operation in an endeavour to extend and systematize the observation of such disturbances.

Similar instruments should be used at all stations; and the one recommended by this Committee as being simple to work, and one that furnishes results sufficiently accurate for the main objects in view is indicated in the accompanying report (see pp. 2—4) by the letter M, a sketch of the same is shown on p. 7, whilst there is an example of one of its records on p. 49.

We desire to know whether you are disposed to purchase, and make observations with, one of these instruments, the cost of which, including photographic material to last one year, packed for shipment, is about £50. Should you reply in the affimative, we shall be pleased to arrange with a competent maker for the construction of an instrumeut for you, and to furnish instructions respecting installation and working. In case an instrument be established at your observatory, we should ask that notes of disturbances having an earthquake character be sent to us for analysis and comparison with the records from other stations. From time to time the results of these examinations would be forwarded to your observatory.

The first object we have in view is to determine the velocity with which motion is propagated around or possibly *through* our earth. To attain this, all that we require from a given station are the times at which various phases of motion are recorded; for which purpose, for the present at least, we consider that an instrument recording a single component of horizontal motion to be sufficient. Other results which may be obtained from the proposed observations are numerous.

The foci of submarine disturbances, such for example as those which from time to time have interfered with telegraph cables, may possibly be determined, and a new light thrown upon changes taking place in ocean beds.

The records throw light upon certain classes of disturbances now and then noted in magnetometers, and other instruments susceptible to slight movements, whilst local changes of level, some of which may have a diurnal character, may, under certain conditions, become apparent.

Trusting that you will find it possible to co-operate in this endeavour to extend our knowledge of the earth on which we live,

We remain, Sir,

(On behalf of the Commmittee),

Your obedient servants,

G. J. SYMONS, *Chairman.*

C. DAVISON, } *Joint Honorary*
J. MILNE, } *Secretaries.*

It is requested that Replies be addressed to—

THE SEISMOLOGICAL COMMITTEE, BRITISH ASSOCIATION,
BURLINGTON HOUSE, LONDON, W.

PHENOMENAL WEATHER IN VICTORIA.

DR. ARGYLE, writing from Melbourne, on the 17th of January, to his uncle in Tamworth, says, "Our climate, at which we growl quite as much as you do in England, has gone quite mad, I think. The temperature on Thursday week was 101 deg. in the shade and terribly oppressive. On Saturday and Sunday there was a terrific storm, the thermometer dropped nearly 60 deg., and we had 4½ inches of rain in 48 hours. (This in January, usually our driest and hottest month.) To-day it has been hailing and is bitterly cold, but the sun has now come out, and I should not be surprised if it turned out hot again to-morrow. We also had an interesting phenomenon about a fortnight ago; there was a heavy fall of rain, which was full of a red dust, and the next morning the whole landscape was red. The "rain of blood," it was called, and really it looked like it. The funny thing was that it occurred on a public holiday and on a hot day, so that all the holiday-makers who were caught in it had their clothes stained a deep red, and as many people were dressed in white, you may guess what they looked like."—*Tamworth Herald*, 27th Feb., 1897.

ELECTRIC TREES IN DAKOTA.

ON January 4th, during the worst of the great wind and snowstorm at Huron, the air was heavily laden with electricity. The cottonwood trees in front of the Chicago and North-western offices presented a very strange and novel appearance. The trees were buried in snow almost to their tops, but at the end of each twig on every branch in sight was an electrical spark about as large as a common field Pea. On taking hold of a twig the spark extinguished, but on withdrawing the hand the spark reappeared. Dispatcher Wilson, who wore a glove with a hole in the thumb, took hold of a twig, and the spark transferred itself to his thumb and back to the twig when he let go. There was no shock experienced, says an American contemporary, in handling the twigs, and the light did not waver or tremble, but was quite steady. The trees looked as if a colony of fireflies had settled upon them for the purpose of an illumination.—*Journal of Horticulture*, March 4th.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, SEPTEMBER, 1896.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Date.	Absolute. Minimum. Temp.	Date.	Average. Max.	Min.	Dew Point.	Humidity.	Absolute. Max. in Sun.	Min. on Grass.	TotalRain. Depth.	Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
England, London	71·9	8	39·6	21	64·9	51·5	51·6	82	114·1	35·3	5·51	22	6·8
Malta	91·1	5*a*	60·6	29	82·7	68·6	66·0	74	143·7	53·5	·00	0	3·3
Mauritius	79·0	28	60·2	15*b*	76·3	64·7	60·1	73	126·7	48·8	1·15	8	4·7
Calcutta	93·0	10	72·7	30	88·3	77·8	76·8	83	157·9	71·8	9·05	10	8·3
Bombay	90·9	29	75·0	18	86·6	77·6	74·7	78	143·7	69·8	1·62	9	4·7
Ceylon, Colombo	89·2	26	72·8	10	86·9	77·1	73·6	81	149·0	69·8	10·99	23	6·6
Melbourne	75·8	11	36·8	30	61·4	44·0	43·4	71	132·2	28·1	1·93	12	5·6
Adelaide	80·4	15	40·7	17*c*	67·1	46·2	45·0	68	135·0	28·7	·45	12	4·3
Sydney	78·0	13	44·6	26	64·9	51·0	44·2	70	130·9	35·3	·52	14	3·6
Wellington	63·5	7	37·0	30	57·9	46·4	44·6	76	125·0	29·0	4·57	18	4·9
Auckland	68·0	11	44·5	23	61·4	50·8	47·7	74	124·0	40·0	4·51	19	5·8
Jamaica, Kingston	92·9	8	72·1	22	89·1	74·8	72·9	76	...	...	2·92	12	...
Trinidad	92·0	14	68·0	8*d*	88·6	72·1	73·9	83	168·0	66·0	6·46	15	...
Grenada	86·4	15	71·0	8	83·7	74·9	71·6	73	154·4	...	8·49	26	4·6
Toronto	86·3	11	27·6	23	66·5	48·0	51·5	79	96·0	21·8	5·09	15	5·5
New Brunswick, Fredericton	85·7	11	27·0	24	64·2	42·3	49·0	77	...	...	7·02	11	5·2
Manitoba, Winnipeg	78·6	23	20·0	21	62·0	38·4	...	...	...	...	1·96	10	6·5
British Columbia, Esquimalt	69·9	4	37·7	26	61·1	44·5	48·4	86	...	...	1·52	5	8·8

a—and 21. *b*—and 22. *c*—and 20, 25. *d*—and 19.

REMARKS.

MALTA.—Adopted mean temp. 74°·7, or 0°·4 below the average. Mean hourly velocity of wind 8·6 miles. Average temp. of sea 77°·0. Thunderstorm on 14th. Lightning on 17th and 18th. J. F. DOBSON.

Mauritius.—Mean temp. of air 0°·1 above, of dew point 0°·2 above, and rainfall ·27 in. below, their respective averages. Mean hourly velocity of wind 11·3 miles, or 0·6 below average; extremes, 26°·2 on 6th, and 2·0 on 21st; prevailing direction, E. by S. T. F. CLAXTON.

CEYLON, COLOMBO.—Lightning was seen on the 6th, 9th 19th, 28th and 29th. Thunderstorms occurred on the 20th, 21st and 30th. A. E. WACKRILL.

Adelaide.—Mean temp. 0°·5 below the average for 39 years. A very dry month, the total rainfall being ·45 in., whilst the average is 1·79 in. A very severe drought over the whole of the colony especially during the past three months. C. TODD, F.R.S.

Sydney.—Rainfall 2·63 in. below, temperature 0°·7 below and humidity 0°·5 below, their respective averages. H. C. RUSSELL, F.R.S.

Wellington.—Showery up to the 5th, then fine to the 16th and showery for the remainder of the month, with generally strong N.W. and S.E. winds and cold weather. Slight snow on 27th and snow on the hills on 30th. Hail on 27th, 29th and 30th. Mean temp. 1°·2 above, and rainfall ·31 in. above, their respective averages. R. B. GORE.

Auckland.—Beginning and close of the month stormy, wet and disagreable; middle very fine, warm and dry. Mean temperature and rainfall much in excess of the average. T. F. CHEESEMAN.

TRINIDAD.—Rainfall 1·07 in. below the average of 30 years. J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL, FEBRUARY, 1897.

[For the Counties, Latitudes, and Longitudes of most of these Stations, see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
I.	Uxbridge (Harefield Pk.)	3·04	XI.	Rhayader, Nantgwillt ...	4·19
II.	Dorking, Abinger Hall .	3·37	,,	Lake Vyrnwy	6·14
,,	Birchington, Thor	1·96	,,	Corwen, Rhug	3·09
,,	Hailsham	3·18	,,	Criccith, Talarvor.....	3·48
,,	Ryde, Thornbrough	3·51	,,	I. of Man, Douglas	3·62
,,	Emsworth, Redlands ...	3·38	XII.	Stoneykirk, Ardwell Ho.	2·37
,,	Alton, Ashdell	3·65	,,	New Galloway, Glenlee	4·44
III.	Oxford, Magdalen Col..	2·21	,,	Lilliesleaf, Riddell	1·73
,,	Banbury, Bloxham	2·77	XIII.	N. Esk Res. [Penicuick]	2·30
,,	Northampton, Sedgebrook	2·94	,,	Edinburgh, Blacket Pl..	1·42
,,	Duddington [Stamford].	2·95	XIV.	Glasgow, Queen's Park..	2·85
,,	Alconbury	2·37	XV.	Inverary, Newtown	7·12
,,	Wisbech, Bank House...	2·26	,,	Oban, The Corran	4·07
IV.	Southend	2·05	,,	Islay, Gruinart School...	·91
,,	Harlow, Sheering..... ...	1·04	XVI.	Dollar.....	2·60
,,	Colchester, Lexden	2·33	,,	Balquhidder, Stronvar...	8·13
,,	Rendlesham Hall	2·23	,,	Ballinluig	1·99
,,	Rushall Vicarage	2·17	,,	Dalnaspidal H.R.S.....	5·49
,,	Swaffham	2·34	XVII.	Keith H.R.S.....	·56
V.	Salisbury, Alderbury ...	3·42	,,	Forres H.R.S.	·62
,,	Bishop's Cannings	3·10	XVIII.	Fearn, Lower Pitkerrie..	·66
,,	Blandford, Whatcombe .	4·11	,,	N. Uist, Loch Maddy ...	4·28
,,	Ashburton, Holne Vic...	3·76	,,	Invergarry.....	6·50
,,	Okehampton, Oaklands.	4·82	,,	Aviemore H.R.S.	1·56
,,	Hartland Abbey	5·45	,,	Loch Ness, Drumnadrochit	2·42
,,	Lynmouth, Glenthorne.	4·01	XIX.	Invershin	1·00
,,	Probus, Lamellyn	4·81	,,	Scourie	3·40
,,	Wellington, The Avenue	4·25	,,	Watten H.R.S.....	·88
,,	Wincanton.....	4·32	XX.	Dunmanway, Coolkelure	6 75
VI.	Clifton, Pembroke Road	3·59	,,	Cork, Wellesley Terrace	2·74
,,	Ross, The Graig	2·19	,,	Killarney, Woodlawn ...	4·15
,,	Wem, Clive Vicarage ...	2·07	,,	Caher, Duneske	...
,,	Cheadle, The Heath Ho.	3·14	,,	Ballingarry, Hazelfort...	1·78
,,	Worcester, Diglis Lock	2·34	,,	Limerick, Kilcornan ...	1·22
,,	Coventry, Kingswood ...	3·59	,,	Broadford, Hurdlestown	1·62
VII.	Grantham, Stainby	3·92	,,	Miltown Malbay	3·35
,,	Horncastle, Bucknall ...	2·67	XXI.	Gorey, Courtown House	1·98
,,	Worksop, Hodsck Priory	3·03	,,	Athlone, Twyford	2·42
,,	Neston, Hinderton	2·07	,,	Mullingar, Belvedere ...	3·35
VIII.	Southport, Hesketh Park	2·51	,,	Longford, Currygrane...	2·54
,,	Broughton-in-Furness ...	3·51	XXII.	Woodlawn	2·86
IX.	Ripon, Mickley.....	2·70	,,	Crossmolina, Enniscoe ..	4·65
,,	Melmerby, Baldersby ...	1·90	,,	Collooney, Markree Obs.	3·30
,,	Scarborough, Observat'y	1·92	,,	Ballinamore, Lawderdale	3·20
,,	Middleton, Mickleton ...	2·17	XXIII.	Lough Sheelin, Arley...	...
X.	Haltwhistle, Unthank...	2·85	,,	Warrenpoint.....	2·16
,,	Bamburgh	·88	,,	Seaforde.....	2·53
,,	Keswick, The Bank.....	4·49	,,	Belfast, Springfield	2·47
XI.	Llanfrechfa Grange	3·72	,,	Bushmills, Dundarave..	2·37
,,	Llandovery	4·78	,,	Stewartstown	2·86
,,	Castle Malgwyn	2·77	,,	Killybegs	5·32
,,	Builth, Abergwesyn Vic.	6·60	,,	Lough Swilly, Carrablagh	3·31

FEBRUARY, 1897.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours. Dpth	Greatest Fall in 24 hours. Date	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Max. Date	Min. Deg.	Min. Date.	No. of Nights below 32°. In shade.	No. of Nights below 32°. On grass.
			inches.	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	2·75	+ ·87	·59	4	14	58·0	26	27·9	8	2	9
II.		Maidstone (Hunton Court)...	2·32	+ ·52	·85	1	10	...	...	...	...	...	...
,,		Strathfieldsaye	3·84	...	·78	4	15	...	...	...	...	...	...
III.		Hitchin	2·34	+ ·59	·46	5	16	56·0	26	28·0	7	7	...
,,		Winslow (Addington)	2·60	+ ·44	·46	5	13	57·0	22	29·0	8, 18	5	10
IV.		Bury St. Edmunds (Westley)	2·33	+ ·77	·58	5	14	56·0	26	28·0	3	..	...
,,		Norwich (Brundall)	2·17	...	·58	5	18	57·8	26	27·4	3	6	12
V.		Weymouth(LangtonHerring)	4·43	+ 1·83	1·29	4	17	53 0	14*b*	32·0	1	1	...
,,		Torquay (Cary Green)	2·98	...	·79	4	15	56·4	20*c*	35·0	1, 17	0	2
,,		Polapit Tamar [Launceston]..	3·94	+ ·67	·75	1	18	53·4	23	30·0	15	3	3
VI.		Stroud (Upfield)	2·94	+ ·38	·54	19	17	56·0	22	33·0	1 &2	0	...
,,		ChurchStretton(Woolstaston)	2·39	— ·06	·35	1	17	58·0	23	31·0	2*e*	8	15
,,		Tenbury (Orleton)	2·21	— ·27	·39	1	12	61·5	22	26·8	28	3	11
VII.		Leicester (Barkby)	2·78	+ ·97	·96	5	18	57·0	26	24·0	27	11	18
,,		Boston	2·90	+ 1·22	·76	4	15	52·0	26	27·0	12	9	...
,,		Hesley Hall [Tickhill].....	2·68	+ 1·18	·86	5	17	57·0	26	25·0	12	11	...
VIII.		Manchester(PlymouthGrove)	2·39	+ ·34	·42	1	19	54·0	28	27·0	6	5	7
IX.		Wetherby (Ribston Hall) ...	1·24	— ·34	·60	6	4	...	...	...	...	...	...
,,		Skipton (Arncliffe)	5·81	+ 1·12	1·28	25	17	..	...	...	...	...	...
,,		Hull (Pearson Park).	2·53	+ ·73	·72	5	15	59·0	26	25·0	1	11	13
X.		Newcastle (Town Moor)	1·13	— ·27	·30	5	11	...	...	...	...	...	...
,,		Borrowdale (Seathwaite).....	12·42	— ·22	2·68	8	19	...	...	...	...	...	...
XI.	WALES.	Cardiff (Ely).....	4·79	+ 1·60	·65	4	22	...	...	...	...	...	...
,,		Haverfordwest	3·52	— ·60	·62	18	23	52·9	26	29·7	28	2	8
,,		Aberystwith (Gogerddan) ...	4·96	+ 1·70	·58	19	21	51·0	10	...	...	...	...
,,		Llandudno.....	2·37	+ ·45	·30	1	20	55·0	26	34·5	1	0	...
XII.	SCOTLAND.	Cargen [Dumfries]	3·63	— ·02	·78	24	14	57·6	22	25·0	12	8	...
,,		Jedburgh (Sunnyside).....	...	...	...	...	...	...	...	...	...	...	...
XIV.		Colmonell	2·63	...	·51	28	18	56 0	19	26·0	11	...	...
XV.		Lochgilphead (Kilmory).....	4·02	— 1·17	·77	24	18	...	...	24·0	9	5	...
,,		Mull (Quinish).....	3·30	— 2·17	·66	4	19	...	...	...	...	...	...
XVI.		Loch Leven Sluices	2·40	— ·35	1·00	26	11	...	...	...	...	...	...
,,		Dundee (Eastern Necropolis)	·85	— 1·25	·35	25	14	59·5	22	25·6	3	9	...
XVII.		Braemar	1·52	— 1·84	·42	25	11	54·0	22	—7·0	4	12	16
,,		Aberdeen (Cranford)	·60	...	·20	28	13	...	...	7·0	3	16	...
,,		Cawdor (Budgate)	·98	— 1·25	·21	25	11	...	...	...	...	...	...
XVIII		Strathconan [Beauly]	3·95	— ·76	1·07	26	10	...	...	...	...	..	...
,,		Glencarron Lodge.....	6·32	...	1·37	25	21	52·5	19	17·9	4	12	...
XIX.		Dunrobin	1·22	— ·87	·32	20	11	56·0	23	20·0	4	10	...
,,		S. Ronaldsay (Roeberry).....	1·50	— 1·14	·19	25	20	50·0	22*d*	21·0	3	12	...
XX.	IRELAND.	Darrynane Abbey.....	4·12	...	·39	12	22	...	...	...	...	...	...
,,		Waterford (Brook Lodge) ...	2·13	— 1·95	·37	3	18	57·0	22	31·0	28	1	...
,,		O'Briensbridge (Ross)	2·73	...	·49	24	22	...	...	...	...	...	...
XXI.		Carlow (Browne's Hill)	1·80	— 1·28	·21	8*a*	16	...	...	...	...	...	...
,,		Dublin (FitzWilliam Square)	1·40	— ·95	·27	2	16	59·7	19	35·0	1	0	4
XXII.		Ballinasloe	2·44	— ·34	·46	1	22	54·0	25	31·0	25	2	...
,,		Clifden (Kylemore)	5·63	...	·94	24	22	...	...	...	...	...	...
XXIII		Waringstown	2·43	— ·02	·34	4	18	57·0	25	28·0	11	5	12
,,		Londonderry (Creggan Res.).	2·97	— ·06	·50	24	22	...	...	...	...	...	...
,,		Omagh (Edenfel)	3·42	+ ·73	·64	8	19	54·0	25	30·0	11	3	8

+Shows that the fall was above the average ; —that it was below it.

a—and 24. *b*—and 26. *c*—and 22. *d*—and 23, 25 and 26. *e*—3 and 18.

METEOROLOGICAL NOTES ON FEBRUARY, 1897.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail S for Snow.

ENGLAND.

ADDINGTON.—The heavy rainfall on the first five days of the month, helped by the rainfall of the last four days of January, caused very large and continuous floods, the meadows being covered with water to a very wide extent for a longer time than usual. A very thick fog on the 23rd; high wind on the 24th, 25th and 26th. Weather generally dull.

BURY ST. EDMUNDS, WESTLEY.—A mild month, the latter part very fine and favourable for agriculture. Vegetation forward.

NORWICH, BRUNDALL.—The earlier part of the month was rainy and sunless; the latter part bright, and some days were unusually warm for the season. A heavy fall of S occurred at night on 1st, the ground being covered for four days. Fog on 3rd. Floods on marshes on 7th. Gale from 4 a.m. to 6 a.m. on 21st; some gusts very violent.

WEYMOUTH, LANGTON HERRING.—The month was very mild throughout; from the 1st to the 13th no less than 3·69 in. of R fell. With the exception of 1881 and 1883, when 4·76 in. and 4·73 in. fell respectively, the wettest February in 23 years. The average temp. at 9 a.m., 43°·7, is 4°·5 above the average, and the highest since 1877, when it was 44°·0. February, 1897, and February, 1895, compared, show a striking difference:—

	Average, 9 a.m.	Min.	Max.
1897	43°·8	40°·5	48°·2
1895	27°·0	23°·7	33°·8

Fogs occurred on 10 days (some of them dense) in the first half of the month. February was without frost, the 32° registered on the 1st being the temp. of the evening of January 31st.

TORQUAY, CARY GREEN.—Rainfall ·46 in. above the average; mean temp. 46°·6, or 3°·6, above the average. Duration of sunshine 52 hours, being 26 hours 45 minutes below the average; 11 sunless days.

POLAPIT TAMAR [LAUNCESTON].—A very wet and unseasonably warm month. Exactly seven inches of rain has fallen during the two months of the year, compared with 1·89 in. for the corresponding period of 1896.

STROUD, UPFIELD.—S.W. gale on 26th. Wind S.W. on 15 days, S.E. on 4 days, and N.W. on 7 days.

WOOLSTASTON.—A seasonable month, with no extremes of temp. S fell on the 2nd. Mean temp. 42°·3.

TENBURY, ORLETON.—The first five days were very wet and damp, with a large amount of fog; but afterwards the weather was fine, with a large percentage of sun. From the 13th to the end of the month the temp. reached 50° on every day, and the mean temp. of the month is more than 3°·5 above the average. S about two inches deep on 2nd.

LEICESTER, BARKBY.—Warmth above average. Very high winds during the last week. Mean temp. 41°·2.

WALES.

HAVERFORDWEST.—One of the most gloomy, foggy and wet Februaries ever registered here, although the rainfall was never at any time large. There was very little frost and there were no gales of any magnitude. Lunar halos were

seen on the 14th and 16th. Fog occurred on 18 days and the wind blew mostly from southerly points. The readings of the bar. were remarkably high on the 15th, 16th, and 17th, and again on the 21st, 22nd, and 23rd. Highest 30·673 in. (cor. and red.) at 9 p.m. on the 22nd.

ABERYSTWITH, GOGERDDAN.—Very stormy throughout the month and very mild and sunless.

SCOTLAND.

CARGEN [DUMFRIES].—The month was characterized by constant atmospheric fluctuations. Bar. pressure is slightly above the average of 38 years while the temperature is 2° above the mean for that period. Exactly the contrary experience of last year, the first half of the month was very much colder than the last; the mean temp. of the first thirteen days being 36°·5 and from 14th to 28th 45°·5; the point reached by the maximum on the 22nd, 57°-6, has been exceeded only twice, 58°·4 being registered on 20th February, 1891, and 57°·9 on 23rd February, 1862. One inch of S fell on the 3rd. During the early hours of 21st a somewhat violent S.W. gale was experienced and a fresh breeze from the same quarter blew on the 25th. Though compared with last year vegetation is backward, a fair start has been made in spring growth, and pastures have a promising appearance, farm work, however, has been much retarded by the wet weather during the latter half of the month.

COLMONELL.—Rainfall 1·11 in. below, mean temp. 3°·8 above, the average of 20 years.

BRAEMAR.—With the exception of the extreme frost on 3rd and 4th, *viz.*, 2° and 7° below zero, an unusually fine month.

ABERDEEN, CRANFORD.—The last two weeks of the month were warm, the max. temp. ranging from 42° to 59°.

S. RONALDSAY, ROEBERRY.—The first half of the month was cold and windy, the last half mild and damp. Mean temp. 38°·2.

IRELAND.

DARRYNANE ABBEY.—A very mild month with much mist and fog.

O'BRIENSBRIDGE, ROSS.—The temperature of the month was much above the average.

DUBLIN.—Taken as a whole, this was one of the mildest Februaries on record in Dublin, there was scarcely any frost even on the ground, and the sky was often densely clouded. The first third of the month was gloomy and wet. Equatorial winds were prevalent during the greater part of the month. The mean temp. 46°·0 was 3°·7 above the average. Neither Hail, Sleet nor S fell. Foggy on 7 days. Cloud much above average. High winds were noted on 7 days and reached the force of a gale on the 18th, 20th, 24th, 25th and 26th. A lunar halo was seen on the 16th.

OMAGH, EDENFEL.—A seasonable February with as a rule dull, dark weather. Rainfall and temperature were both rather over the average and atmospheric pressure was very unsteady.